

REMARKS

It is noted, with appreciation, that the Examiner has indicated that although claims 3, 4, 6, 7, 14, 16 and 19 are objected to as being dependent upon a rejected base claim, these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2 and 13-18 have been rejected by the Examiner under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter in which the Applicant regards as the invention. This rejection is respectfully traversed

The subject matter of claim 2 merely recites the relationship between various elements and variables such as the discharge elements N, the distance M and the effective number of discharging elements N_{eff} for image-wise activation. In this connection, claims 2, 13 and 18 have been amended to introduce a structural characteristic to the particular relationship defined by the claim. Accordingly, it is believed that the Examiner's rejection has been eliminated.

Claims 1, 5, 8-10, 12, 15 and 17 have been rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by Nishikori (EP 1,120,269). This rejection is respectfully traversed.

The present invention relates to a printing device such as a printing or copying system employing printheads containing discharging elements, for example nozzles, for image-wise forming dots of a marking substance on an image-receiving member. According to the present invention, non-uniformity due to different drop sizes is addressed by controlling the printhead of the interlaced systems and multi-pass systems as well as combinations thereof to overcome or at least reduce the visibility of systematic image dot-size variations while limiting the influence on productivity. The present invention is further directed to controlling the print head and the image-receiving member displacement unit such that in operation for a given print mass, an optimal number of nozzles is actually image-wise activated and an optimal displacement distance in the sub-scanning direction is determined which limits the visibility of banding artifacts while maximizing productivity.

In rejection of the claims of the present application, the Examiner relies upon the Nishikori reference for disclosing a methoding apparatus in which ink drops of two different sizes are used to form an image on a medium such as paper. In particular, the Examiner points that the Nishikori reference discloses that a particular pattern may be applied to prevent, or at least reduce banding. In this regard, the Examiner mainly refers to Figure 13 of the Nishikori reference.

On page 4, lines 9-10 of the Examiner's Office Action letter, the Examiners states that Figure 13 teaches reducing print non-uniformity due to different size nozzles. However, according to the description, for example in paragraph [0013] and/or in paragraph [0116], the ladder relating to Figure 13, it is clearly described and disclosed that the color non-uniformity due to by-directioneey printing is reduced. There appears to be no indication in the prior art reference that non-uniformity due to different drop sizes is addressed.

Figure 13 discloses that a pixel of an image may be formed by multiple drops of different sizes, which drops are jetted in a forward movement or a backward movement of an inkjet head. In particular, Figure 13 shows an embodiment illustrating which drops may be jetted in the forward movement and which drops may be jetted in the backward movement such that no color banding results. Thus, Figure 13 does not disclose or suggest to use only a few nozzles of a plurality of nozzles and to accordingly control a displacement in the sub-scanning direction in order to reduce non-uniformity due to drop size differences as recited in the claims of the present application. Figure 13 only shows an example of an assembly of three printheads (C1, M1, Y1) in a forward movement and in a backward movement and furthermore, Figure 13 shows a pixel in a number of tone gradations (see reference numerals 1-39) and how this may be constructed using two passes of the three print head. As such, Figure 13 is only exemplary and does not appear to suggest that it is intended that the three printheads only use a limited number of nozzles in each pass. Accordingly, it is believed that the Nishikori reference, not being concerned with Applicant's problem, certainly does not suggest the Applicant's solution to said problems. Accordingly, the Applicant has defined an inventive contribution which is not contemplated by the Nishikori reference.

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Accordingly, in view of all the above amendment and remarks reconsideration of the rejection and allowance of all of the claims of the present applications are respectfully requested.

Conclusion

In view of the above remarks, it is believed that claims are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Joseph A. Kolasch, Reg. No. 22, 463, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

By 

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